

TITLE**PACKAGE WITH INTEGRAL PLUG****RELATED APPLICATIONS**

[0001] There are no applications related to this invention anywhere in the world.

BACKGROUND OF THE INVENTION**1. Field of the Invention**

[0002] The present invention generally relates to product packaging. The invention provides a package having an integral plug attached to the interior of the package for sealing an opening in a product in order to prevent material within the packaged product from being exposed to air in the package.

2. Description of the Prior Art

[0003] Various types of packages are used for packaging small articles of merchandise and displaying them in retail environments. A non-exhaustive list includes blister packages; cardboard, paper board, and plastic boxes and tubes; and plastic "clamshells." Many variations of these basic package types have been developed to address particular packaging needs.

[0004] One type of article that may be contained in a package is a capless writing instrument having a retractable nib. Because such writing instruments have no caps, the ink in the writing instrument is exposed to air while the writing instrument is stored in the package. While exposure of the ink to air may not cause any problems over the normal period of use of the writing instrument, such exposure over long periods of storage in the package may result in significant drying or evaporation of the ink, adversely affecting performance of the writing instrument. Many conventional packages are not impermeable to air, and even if a package is impermeable to air, enough air might be trapped in the package with the writing instrument to cause drying or evaporation of the ink, absent some means of sealing the opening in the writing instrument through which the nib projects and retracts in order to prevent exposure to the air.

[0005] No previously known package provides such sealing means. Moreover, consumer convenience would be enhanced by providing such sealing means as an integral part of the package, so that the sealing means remains attached to the package when the writing instrument is removed, rather than requiring the consumer to remove a separate seal or plug from the writing instrument after it has been taken out of the package. Hence, there exists a need for a package

having an integral plug to seal the opening in a capless writing instrument in order to prevent or limit exposure of the ink to air while in the package.

SUMMARY OF THE INVENTION

[0006] Accordingly, it is an object of the present invention to provide a package having integral means to seal an opening in a packaged product, such as a capless writing instrument, in order to protect material within the packaged product, such as ink, from excessive exposure to air while stored in the package. Another object of the present invention is to provide a package containing an integral plug positioned to seal an opening in a capless writing instrument while the package remains unopened. Yet another object of the present invention is to improve the shelf life of a capless writing instrument by providing an integral plug in a package. A further object is to provide a package having means to assist the user to remove the marking instrument in a direction so that the plug seal pulls away from the marking instrument upon removal.

[0007] What is disclosed is a package for containing an article of merchandise, said package having a plug portion projecting into the interior of the package so that it fits firmly in an opening of the article of merchandise contained within the package. Depending on the shape of the opening to be sealed, the plug portion may be formed in the shape of a cone, a dome, a closed cylinder, or another appropriate shape. It may be formed by a structure molded into the packaging material if the package is manufactured of plastic or similar moldable material, or it may be manufactured separately of an elastomeric material or other appropriate material and permanently attached to the package interior. Alternatively, the plug portion may be molded into or attached to a package insert molded to substantially conform to the shape of the merchandise in order to hold the merchandise securely within the outer package. If the package is manufactured of moldable material, the package itself may be molded to conform to the shape of the merchandise to be contained therein. Optionally, the package may have perforations or other means to facilitate easy removal of the merchandise in a direction such that the merchandise is pulled away from the plug portion, leaving the plug portion attached to the package or package insert.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008] FIG. 1 is a perspective view showing an embodiment of the present invention, in which the package is a blister package containing a capless writing instrument.

[0009] FIG. 2 is an elevational cross-section view of a blister package of the present invention containing a capless writing instrument.

[0010] FIG. 3 is an elevational cross-section view of an alternative embodiment of the present invention containing a capless writing instrument. In this alternative embodiment, the package is a blister package in which the blister portion of the package has a molded indentation that forms the plug.

[0011] FIG. 4 is a plan view of the back of a blister package of the present invention showing perforations in the backing card to facilitate removal of a writing instrument.

[0012] FIG. 5 is an elevational cross-section view taken along line 5-5 from FIG. 1 of a blister package of the present invention showing the manner of removing the writing instrument from the package after tearing away a portion of the backing card along the perforations shown in FIG. 4.

[0013] FIG. 6 is an elevational cross-section view of a blister package of the present invention after a portion of the backing card has been torn away along the perforations shown in FIG. 4 and the writing instrument has been removed.

[0014] FIG. 7 is an enlarged perspective break-away view taken along line 7-7 from FIG. 6 showing in more detail a preferred embodiment of the integral plug attached to the blister portion of a blister package.

[0015] FIG. 8 is a perspective view of a clamshell package of the present invention containing a capless writing instrument.

[0016] FIG. 9 is an elevational cross-section view of a clamshell package of the present invention containing a capless writing instrument.

[0017] FIG. 10 is an elevational cross-section view of a package insert molded to conform to the shape of a capless writing instrument and having a plug portion in accordance with the present invention.

[0018] FIG. 11 is a perspective view of a box of the present invention containing a capless writing instrument.

DETAILED DESCRIPTION OF THE INVENTION

[0019] FIGS. 1 and 2 show a blister package, generally designated as **10**, of the present invention containing a capless writing instrument **1**. The writing instrument is not a part of the present invention and is illustrated only to demonstrate one use of the invention. While the

following discussion, for illustrative purposes, generally describes the invention as containing a writing instrument, the invention is not limited to such use; rather, it can be used to contain any small product having an opening that needs to be sealed while the product is in the package in order to prevent degradation of the product. Similarly, because blister packages are widely used to contain capless writing instruments and other small articles of merchandise, the following discussion generally refers to blister packages. However, it will be understood that the invention is not limited to blister packages, but includes any type of package that can have a plug portion permanently attached to its interior or molded into the package material itself, including, without limitation, a box, a “clamshell” package, and a closed tube.

[0020] The blister package 10 has two main parts: a blister portion 2 and a backing card 3. The blister portion 2, in turn, has three main parts: a preformed cavity 4 for holding the merchandise; a generally flat outer perimeter flange-like portion 5; and an integral plug portion 6. The blister portion 2 may be manufactured using materials and molding processes well known in the art. Preferably, the blister portion is manufactured by a thermoforming process using clear plastic so that the product can be seen in the package. The embodiment of the package illustrated in FIG. 1 optionally includes a hole 7 in the backing card 3 for hanging the package on a display rack. The integral plug portion 6 is preferably molded of an elastomeric material to provide an airtight seal against the opening 8 of the capless writing instrument 1 or other product. The plug portion 6 may be molded in any shape appropriate to the opening to be sealed. Where the opening is generally circular, the plug portion 6 is preferably formed in the shape of a cone, a dome, or a closed cylinder. The plug portion 6 is attached to the interior of the preformed cavity 4 by appropriate means known in the art, which may include thermal or adhesive bonding or mechanical means such as a flange-like portion of the plug that projects through a hole in the blister portion 2 to the exterior of the preformed cavity 4. The plug portion 6 is sized and positioned to fit securely in the opening 8 of the capless writing instrument 1 or other product while it is enclosed in the package. In one embodiment, the blister portion 2 has optional perforations 9 at the end opposite the end with integral plug portion 6. Said perforations 9 facilitate easy removal of the product from the package in such a manner that the product is pulled away from integral plug portion 6, which remains attached to the package

[0021] FIG. 2 illustrates the manner in which integral plug 6 seals the opening 8 of capless writing instrument 1. The portion of integral plug portion 6 that is inside capless writing

instrument **1** is shown by a broken line. Preformed cavity portion **4** is sized so that the end of capless writing instrument **1** opposite opening **8** firmly abuts the interior wall of preformed cavity portion **4**, thus holding capless writing instrument **1** firmly in place against integral plug **6**.

[0022] Referring next to FIG. 3, an alternative embodiment is disclosed in which preformed cavity portion **4** is molded with an indentation **12** that extends into the opening **8** of the capless writing instrument **1** or other product in order to seal the opening. In this embodiment, molded indentation **12** replaces the plug portion **6** illustrated in FIGS. 1 and 2. Molded indentation **12** provides a sealed friction fit while the writing instrument is disposed within the blister package **10**. It will be readily understood that the structure forming the plug can also be molded as a projection without any indentation.

[0023] FIGS. 4 and 5 show a preferred embodiment having a perforation line **14** in the backing card **3**. Perforation line **14** defines a flap **16** behind the preformed cavity portion **4** of blister portion **2**. Flap **16** can be torn back from backing card **3** along perforation line **14** in order to facilitate easy removal of the capless writing instrument **1** through the back of the package. Perforation line **14** is spaced from the plug end of the package to bias the direction of removal of the writing instrument away from the plug end. Backing card **3** may optionally include a printed legend reading "Open here" or similar language near arcuate end **20** of flap **16** to assist the consumer in opening the package.

[0024] FIG. 5 shows the manner of removing the capless writing instrument **1** from the package after tearing back flap **16** along the perforation line **14** shown in FIG. 4. Flap **16** is shown in tear-away position with writing instrument **1** partially removed.

[0025] Referring next to FIGS. 6 and 7, the empty package is shown after removal of writing instrument **1** (not shown in this drawing), illustrating that plug portion **6** remains attached to the interior of preformed cavity **4** after removal of the merchandise from the package. FIG. 7 shows in greater detail plug portion **6** attached to the interior of preformed cavity **4**.

[0026] FIGS. 8 and 9 show a clamshell package generally designated as **22** containing a capless writing instrument **1**. The clamshell package **22** comprises an upper portion **24** and a lower portion **26** joined together at hinge portion **28**. Upper portion **24** and lower portion **26** are preferably manufactured of plastic or similar material molded to conform to the shape of writing instrument **1**, and each is provided with a flat flange-like portion **30** around the perimeter. Optionally, clamshell package **22** may be provided with a hole **32** near the end of the package for

hanging the package on a display rack. Clamshell package **22** is manufactured in the “open” position with the upper portion **24** and lower portion **26** opposite adjacent to each other and joined by hinge portion **28**. In the embodiment shown, plug portion **6** is affixed to the interior of upper portion **24** at the end that will hold the open end of capless writing instrument **1**. After the article of merchandise, such as the writing instrument **1**, has been placed into upper portion **24** with plug portion **6** inserted into the opening of capless writing instrument **1**, upper portion **24** and lower portion **26** are folded together at hinge portion **28** and bonded together via heat sealing or another method known in the art. In FIG. 9, the portion of plug portion **6** within capless writing instrument **1** is shown by a broken line. Optionally, clamshell package **22** may be provided with perforations or other features (not shown) near the end opposite the plug end to facilitate easy opening of the package and to bias the direction of removal of writing instrument **1** away from the plug end. Other options (not shown) to assist the user in removing the writing instrument include printed legends reading “Open Here,” “Cut Here,” or similar language.

[0027] Referring to FIG. 10, there is shown a package insert **40** for holding an article of merchandise, in this case a capless writing instrument **1**, securely within an outer package, such as a box. Package insert **40** is preferably molded of plastic or similar material to conform substantially to the shape of the article of merchandise to be contained therein, so that once the merchandise is placed in the package insert **40** and the package insert **40** is placed in the outer package, the merchandise will not move about in the package during handling. Plug portion **6** is affixed to package insert **40** in an appropriate position to plug the opening in the article of merchandise. The portion of plug portion **6** within capless writing instrument **1** is shown by a broken line. Since package insert **40** is molded to conform

[0028] Referring to Fig. 11, there is shown a capless writing instrument **1** contained in a box **50** having plug portion **6** affixed to the interior so that plug portion **6** fits into and seals the opening in capless writing instrument **1**. Optionally, box **50** may be provided with perforations or other features (not shown) near the end opposite the plug end to facilitate easy opening of the package and to bias the direction of removal of writing instrument **1** away from the plug end. Another option (not shown) to assist the user in removing the writing instrument in the preferred direction is a printed legend reading “Open Here” or similar language near the end opposite the plug.

[0029] According to the provisions of the patent statutes, we have explained the principle, preferred construction, and mode of operation of the invention, and have illustrated and described what we now consider to represent its best embodiments. However, it should be understood that within the scope of the appended claims and the foregoing description, the invention may be practiced otherwise than specifically illustrated and described.